

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

**THIS PAGE BLANK (USPTO)**

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification $\hat{\circ}$ : A61K 7/50, 7/48		A1	(11) International Publication Number: <b>WO 97/07781</b> (43) International Publication Date: 6 March 1997 (06.03.97)
(21) International Application Number: PCT/EP96/03718 (22) International Filing Date: 21 August 1996 (21.08.96) (30) Priority Data: 60/002,732 24 August 1995 (24.08.95) US (71) Applicant (for AU BB CA GB IE IL KE LK LS MN MW NZ SD SG SZ TT UG only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB). (71) Applicant (for all designated States except AU BB CA GB IE IL KE LK LS MN MW NZ SD SG SZ TT UG): UNILEVER N.V. [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL). (72) Inventors: VILLA, Virgilio, Barba; 140 Grove Street, Bergenfield, NJ 07621 (US). FUJIIWARA, Mitsuko; Apartment #11, 1105 Baytowne Drive, Champaign, IL 61820 (US). ANANTHAPADMANABHAN, Kavssery, Parameswaran; 41 Westbrook Road, Newburgh, NY 12550 (US). CASO, Steven; 44 Hackensack Avenue, Ridgefield Park, NJ 07660 (US). VINCENT, Carol, Kregler; 18 Wolfe Drive, Wanaque, NJ 07465 (US).		(74) Agents: MOLE, Peter, Geoffrey et al.; Unilever plc, Patent Division, Colworth House, Sharnbrook, Bedford MK44 1LQ (GB). (81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(54) Title: PERSONAL CLEANSING SYSTEM COMPRISING POLYMERIC DIAMOND-MESH BATH SPONGE AND LIQUID CLEANSER WITH HALOGENATED BIOCIDES			
(57) Abstract  In one embodiment the present invention relates to a personal bath or shower gel system comprising (A) a light weight polymeric meshed sponge and (B) a liquid cleanser comprising (1) an effective amount of surfactant(s) and (2) a halogenated bacteriostat. In a second embodiment, the invention relates to a method for enhancing delivery/dispersion of bacteriostat on skin or substrate by either applying liquid to sponge and applying sponge to substrate and/or applying liquid to skin/substrate and then rubbing skin/substrate with said sponge.			

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LJ	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

PERSONAL CLEANSING SYSTEM COMPRISING POLYMERIC DIAMOND-MESH  
BATH SPONGE AND LIQUID CLEANSER WITH HALOGENATED BIOCIDES

5 FIELD OF THE INVENTION

The present invention relates to a kit or cleansing system comprising a personal cleansing hand held bath sponge; and a liquid cleanser for bath or shower, comprising a halogenated biocide or bacteriostat. The invention further comprises a method for enhancing deposition of said biocide in liquid cleanser compositions using a diamond-mesh bath sponge.

15 BACKGROUND OF THE INVENTION

The use of a sponge or system instrument to apply soap liquid cleansing compositions to the body is well known. U.S. Patent No. 5,295,220 to Hudson et al., for example, teach a washing device for scrubbing the body. The washing member (i.e., sponge) has a substantial uniform cross-section and a substantially porous inner structure which is said to allow water and soap to permeate the surface and interior thereof (column 2, lines 28-31) U.S. Patent No. 5,144,744 to Campagnoli also teaches sponges (specifically diamond-mesh polyethylene sponge) clearly designed for bath usage (see claim 1).

WO 95/00116 (assigned to Procter & Gamble) relates to a personal cleansing system comprising a diamond-mesh bath sponge used in combination with a liquid cleanser comprising a moisturizer. The diamond-mesh sponge is said to enhance lather profile of a cleanser containing such moisturizer.

On page 12 of the World Patent application, it is mentioned that antimicrobial may optionally be added. There is no

mention of any particular kind of antimicrobial and no recognition that the sponge may lead to enhanced deposition of specific bacteriostats, i.e., halogenated (preferably chlorinated) bacteriostats.

5

Finally, Dial Company has been marketing a liquid cleanser with chlorinated bacteriostat since about January, 1995. Applicants have both conceived and reduced to practice the subject invention before this date.

10

#### SUMMARY OF THE INVENTION

15

Applicants have now unexpectedly found that certain bacteriostats, i.e., halogenated bacteriostats, can be readily applied and dispersed using a diamond-mesh bath sponge such as that disclosed, for example, in U.S. Patent No. 5,144,744 to Campagnoli.

20

Specifically, the present invention comprises a system or kit comprising:

25

- (1) a light weight polymeric meshed personal cleansing hand held sponge; and
- (2) a liquid cleanser comprising:

30

- (a) an effective amount of surfactant selected from the group consisting of soap, synthetic surfactants (anionic, nonionic, zwitterionic and/or amphoteric, cationic) and mixtures thereof; and
- (b) .01% to 10% by weight, preferably .05% to 5% by weight of a halogenated bacteriostat.

35

In a second embodiment, the invention comprises a method for enhancing deposition of halogenated bacteriostat in a liquid composition comprising an effective amount of surfactant which

method comprises applying said bacteriostat containing cleanser to the sponge and/or desired surface (i.e., body) and applying the sponge (with or without bacteriostat depending on whether cleanser was added to sponge or to body) to the desired  
5 surface. That is, the cleanser can be applied to the sponge and then applied to the body with the sponge; or the cleanser can be applied to the body and then rubbed on the body with the sponge.

10 BRIEF DESCRIPTION OF THE FIGURES

Figure 1 is a perspective representation of a diamond-mesh polymeric sponge.

15 Figure 2 is a picture showing how the sponge can be held in the hand

Figure 3 shows netting mesh which can be used to make the sponge.

20

DETAILED DESCRIPTION

The present invention is directed to the discovery that when certain bacteriostat containing liquid cleansers are applied to  
25 the body/skin using a light weight polymeric meshed hand held sponge, there is greater deposition/delivery of these bacteriostats than if they had been delivered by a regular sponge. That is, the sponge synergistically interacts with the liquid cleanser plus bacteriostat to enhance delivery of the  
30 bacteriostat. The liquid cleanser containing bacteriostat and the mesh sponge are packaged together as a kit. The liquid cleanser is usually in a separate container in an amount large enough for several uses with the sponge.

35

More specifically, the personal bath or shower body cleansing system comprises:

- 5 (A) a light weight polymeric meshed personal cleansing hand held sponge; said polymeric mesh sponge being in a form suitable for use as a hand held cleansing implement, said hand held sponge having a diameter of from about two (2) inches to about eight (8) inches (5.08 cm. to about 20.32 cm.); preferably the polymeric meshed personal cleansing hand held polymeric mesh sponge is made of polyethylene diamond mesh and has a diameter of from 3 to 5 inches (7.62 cm. to about 12.7 cm.); and
- 10
- 15 (B) a liquid cleanser comprising:
- (1) an effective amount of a surfactant selected from the group of synthetic surfactants and mixtures thereof; and
- (2) a bacteriostat, preferably a halogenated bacteriostat, more preferably selected from the group of halogenated bacteriostats described below.
- 20

The combination of polymeric mesh sponge and cleanser plus bacteriostat enhance the deposition of the bacteriostat. That is the sponge interacts with the bacteriostat to enhance delivery/deposition in a manner superior to other types of sponges.

25

#### Sponge

30 The cleansing polymeric mesh sponge can be prepared from readily available raw materials or with specially designed mesh materials. The polymeric mesh sponge is preferably prepared from extruded tubular netting mesh which has been prepared from special strong and flexible polymeric material. Extruded

35



tubular netting mesh of this type, and particularly those prepared from polyethylene, have been used for the covering of meat and poultry and are readily available in industry.

5 The polymeric mesh sponge comprises a plurality of plys of an extruded tubular netting mesh prepared from a strong flexible polymer, preferably of the group consisting of addition  
10 polymers of olefin monomers, and polyamides of polycarboxylic acids and polyamines, said plys of tubular netting mesh are folded upon itself numerous times to form a soft ball-like  
polymeric mesh sponge.

The tubes or stripes of netted mesh polymer can be securely attached by means of a nylon band or suitable closure. This  
15 type of polymeric mesh sponge is disclosed in U.S. Patent No. 4,462,135, July 31, 1984, to Sanford, incorporated herein by reference.

An example of a hand-held ball-like polymeric mesh sponge is  
20 disclosed in U.S. Patent No. 5,144,744, to Campagnoli, September 8, 1992, incorporated herein by reference. It is a diamond-mesh polyethylene sponge obtained from a number of netting tubes stretched over supports, joined and bound together at the center and then released from the supports.

25 Commercially available "polymeric mesh sponges" are sold by The Body Shop and Bynum Concepts, Inc. Other suppliers include Supremia Use in New Jersey, Sponge Factory Dominicana in the Dominican Republic and Integrated Marketing Group in Harrison,  
30 New York.

The following are some, although certainly not all, specifications for suitable bath polyethylene polymeric mesh sponges:

35

Size Dia.	Tubes	Ea. Length	Total Length	Wt. gm.
3"	2	60 cm	120 cm	15
4"	4	50 cm	200 cm	23
5"	4	80 cm	320 cm	37

One (1") inch = 2.54 cm; 3" = 3 x 2.54 = cm; 4" = 4 x 2.54 = cm; etc.

Figure 1 is a perspective representation of a diamond-mesh polymeric hand held ball-like bath sponge showing a rope handle 7 which can be used in the present invention. The ease with which a cleansing polymeric mesh sponge can be held in the hand for cleaning is shown in Figure 2. A security band 13 hold the multi-layered netting mesh together to form the polymeric mesh sponge. The netting mesh that can be used in making the polymeric mesh sponge is illustrated in Figure 3. wherein 21 represents the mesh in stretched position. The fine polymeric filaments used in making the netting are represented by 18 with 19 representing the spot bonding of the filaments to form the open mesh 20.

Two 2 netting tubes at 60 cm length each can be used to make a 3-inch ball sponge. They can be bundled manually with a loop or rope to form a ball-like polymeric mesh sponge. Other designs such and rectangular gloves and washing implements made with the mesh material also work very well in the system of the present invention.

#### Liquid Cleanser - Surfactant System

The present invention relates to liquid skin cleansing compositions comprising 1 to 99% by weight, preferably 2 to 85%, more preferably 3 to 40% of a mild surfactant system comprising one or more surfactants which alone or together have

been clinically tested to be milder than soap itself as measured by zein solubilization test (soap yields 80% zein solubilized). Preferably, the mildness is such that zein solubilization is in the range 10-60%. At least 10%, preferably at least 25% of the surfactant composition must be anionic surfactant. In theory, as long as the anionic is milder than soap itself, 100% of the surfactant composition may be anionic.

10 A number of anionic, nonionic, cationic and zwitterionic and/or amphoteric surfactants may be employed in the surfactant system of the invention provided of course that the surfactant, if used alone, or surfactant mixture is milder than would be soap itself as measured by the zein solubilization test.

15 Among suitable anionic co-actives are the alkyl ether sulfates, acyl isethionates, alkyl ether sulfonates, sarcosinates, sulfosuccinates, taurates and combinations thereof. Among suitable amphoteric co-actives may be included alkylbetaines, 20 amidopropyl betaines, amidopropyl sultaines and combinations thereof.

Alkyl ether sulfates of the present invention will be of the general formula  $R-(OCH_2CH_2)_nOSO_3^-M^+$  wherein R ranges from  $C_8-C_{20}$  25 alkyl, preferably  $C_{12}-C_{18}$  alkyl, n is an integer from 1 to 40, preferably from 2 to 9, optimally about 3, and  $M^+$  is a sodium, potassium, ammonium or triethanolammonium cation.

Typical commercial co-actives of this variety are listed in the 30 Table below:

Trademark	Chemical Name	Physical Form	Manufacturer
Steol CS 330	Sodium Laureth Sulfate	Liquid	Stepan
Standapol ES-3	Sodium Laureth Sulfate	Liquid	Henkel
Alkasurf ES-60	Sodium Laureth Sulfate	Paste	Alkaril
Cycloryl TD	TEA Laureth Sulfate	Paste	Cyclo
Standapol 125-E	Sodium Laureth-12 Sulfate	Liquid	Henkel
Cedepal TD407MF	Sodium Trideceth Sulfate	Paste	Miranol
Standapol EA-2	Ammonium Laureth Sulfate	Liquid	Henkel

Alkyl ether sulfonates may also be employed for the present invention. Illustrative of this category is a commercial product known as Avenel S-150 commonly known as a sodium C<sub>12</sub>-C<sub>15</sub> Pareth-15 sulfonate.

Another co-active type suitable for use in the present invention is that of the sulfosuccinates. This category is best represented by the monoalkyl sulfosuccinates having the formula  $R_2OCCH_2CH(SO_3--Na^+)COO--M^+$ ; and amido-MEA sulfosuccinates of the formula:  $RCONHCH_2CH_2O_2CCH_2CH(SO_3--M^+)COO--M^+$ ; wherein R ranges from C<sub>8</sub>-C<sub>22</sub> alkyl, preferably C<sub>12</sub>-C<sub>15</sub> alkyl and M<sup>+</sup> is a sodium, potassium, ammonium or triethanolammonium cation. Typical commercial products representative of these co-actives are those listed in the Table below:

Trademark	Chemical Name	Physical Form	Manufacturer
Emcol 4400-1	Disodium Lauryl Sulfosuccinate	Solid	Witco
Witco C5690	Disodium Cocoamido MEA Sulfosuccinate	Liquid	Witco
McIntyre Mackanate CM40F	Disodium Cocoamido MEA Sulfosuccinate	Liquid	McIntyre
Scherccpol CMSNa	Disodium Cocoamido MEA Sulfosuccinate	Liquid	Scher
Emcol 4100M	Disodium Myristamido MEA Sulfosuccinate	Paste	Witco
Scherccpol	Disodium Oleamido MEA	Liquid	Scher
Varsulf S13333	Disodium Ricinoleamido MEA Sulfosuccinate	Solid	Scherex

15

Sarcosinates may also be useful in the present invention as a co-active. This category is indicated by the general formula  $RCON(CH_3)CH_2CO_2--M^+$ , wherein R ranges from  $C_6, C_{12}$ , alkyl, preferably  $C_{12}, C_{18}$ , alkyl and  $M^+$  is a sodium, potassium ammonium or triethanolammonium cation. Typical commercial products representative of these co-actives are those listed in the Table below:

20

Trademark	Chemical Name	Physical Form	Manufacturer
Hamosyl L-95	Sodium Lauroyl Sarcosinate	Solid	W. R. Grace
Hamosyl TOC-30	TEA Cocoyl/Sarcosinate	Liquid	W. R. Grace

25

Taurates may also be employed in the present invention as co-actives. These materials are generally identified by the

30

formula  $RCONR'CH_2CH_2SO_3--M^+$ , wherein R ranges from  $C_8-C_{30}$  alkyl, preferably  $C_{12}-C_{15}$  alkyl, R' ranges from  $C_1-C_4$  alkyl, and  $M^+$  is a sodium, potassium, ammonium or triethanolammonium cation.

Typical commercial products representative of these co-actives are those listed in the Table below:

Trademark	Chemical Name	Physical Form	Manufacturer
Igepon TC 42	Sodium Methyl Cocoyl Taurate	Paste	GAF
Igepon T-77	Sodium Methyl Oleoyl Taurate	Paste	GAF

10

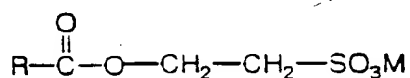
Within the category of amphoterics there are three general categories suitable for the present invention. These include alkylbetaines of the formula  $RN^+(CH_2)_2CH_2CO_2--M^+$ , amidopropyl betaines of the formula  $RCONHCH_2CH_2CH_2N^+(CH_2)_2CH_2CO_2--M^+$ , and amidopropyl sultaines of the formula  $RCONHCH_2CH_2N^+(CH_2)_2CH_2SO_3--M^+$  wherein R ranges from  $C_8-C_{30}$  alkyl, preferably  $C_{12}-C_{15}$  alkyl, and  $M^+$  is a sodium, potassium, ammonium or triethanolammonium cation. Typical commercial products representative of these co-actives are found in the Table below:

20

Trademark	Chemical Name	Physical Form	Manufacturer
Tegobetaine F	Cocamidopropyl Betaine	Liquid	Gold-schmidt
Lonzaine C	Cocamidopropyl Betaine	Liquid	Lonza
Lonzaine CS	Cocamidopropyl Hydroxysultaine	Liquid	Lonza
Lonzaine 12C	Coco-Betaine	Liquid	Lonza
Schercotaine MAB	Myristamidopropyl Betaine	Liquid	Lonza
Velvetex OLB-50	Oleyl Betaine	Paste	Henkel

Within the broad category of liquid actives, the most effective are the alkyl sulfates, alkyl ether sulfates, alkyl ether sulfonates, sulfosuccinates, and amidopropyl betaines.

Another preferred surfactant is an acyl isethionate having the formula



in

which R denotes a linear or branched alkyl group and M denotes an alkali metal or alkaline earth metal or an amine.

Another surfactant which may be used are the monoalkyl or dialkylphosphate surfactants.

Another mild surfactant which may be used, preferably used as primary surfactant in combination with other surfactants noted above, is sodium coco glyceryl ether sulfonate. While desirable to use because of its mildness properties, this coco

AGS alone does not provide optimum lather creaminess. A sodium 90/10 coconut/tallow alkyl AGS distribution is preferred for creaminess. Salts other than the sodium salt such as TEA-, ammonium, and K-AGS and chain length distributions other than 5 90/10 coconut/tallow are usable at moderate levels. Also, some soap may be added to improve lather volume and speed of lathering. Certain secondary co-surfactants used in combination with AGS can also provide a creamier and more stable lather. These secondary surfactants should also be 10 intrinsically mild. One secondary surfactant that has been found to be especially desirable is sodium lauroyl sarcosinate (trade name Hamposyl L, made by Hampshire Chemical).

The amphoteric betaines and sultaines noted above can be used 15 as the sole surfactant, but are more preferred as a co-surfactant. Nonionics generally should not be used as the sole surfactant in this product if high foaming is desirable; however, they can be incorporated as a co-surfactant.

20 Nonionic and cationic surfactants which may be used include any one of those described in U.S. Patent No. 3,761,418 to Parran, Jr., hereby incorporated by reference into the subject application. Also included are the aldobionamides as taught in U.S. Patent No. 5,399,279 to Au et al; and the polyhydroxy 25 fatty acid amides as taught in U.S. Patent No. 5,312,934 to Letton, both of which are incorporated by reference into the subject application.

30 Soaps can be used at levels of about 1 to 10%. Soaps can be used at higher level provided that the surfactant mixture is milder than soap. The soaps may be added neat or made in situ via adding a base, e.g., NaOH; to convert free fatty acids.



Of course, as noted above, soaps should only be used as cosurfactants to the extent that the surfactant system is milder than soap alone.

5 A preferred surfactant active system is one such that acyl isethionate comprises 1 to 15% by weight of the total composition, an anionic other than acyl isethionate (e.g., ammonium lauryl ether sulfate) comprises 1 to 15% by weight of  
10 the total composition and amphoteric comprises 0.5 to 15% by weight of the total composition.

Another preferred active system is one comprising 1 to 20% alkyl ether sulfate. Preferred surfactant active systems may also contain 1 to 10% alkali metal lauryl sulfate or C<sub>14</sub>-C<sub>16</sub>  
15 olefin sulfonate instead of acyl isethionate.

Another preferred cleansing and moisturizing cleansing composition can contain ingredients selected from the group consisting of:

- 20
- (a) 8% to 35% polyol;
  - (b) 35% to 70%, preferably 40% to 65% water;
  - (c) 5% to 20%, preferably 7% to 19%, of mostly insoluble saturated (low iodine value of zero to 15) C<sub>9</sub>-C<sub>22</sub>  
25 fatty acid potassium soap;
  - (d) 0.1% to 7%, preferably 0.5 to 5%, of free C<sub>9</sub>-C<sub>22</sub> fatty acids; and
  - (e) 0.5% to 5%, preferably 0.7% to about 4.5% petrolatum, and mixtures thereof.
- 30

The polyol is selected from the group consisting of :  
glycerin, glycerol, propylene glycol, polypropylene glycols,  
polyethylene glycols, ethyl hexanediol, hexylene glycols, and  
other aliphatic alcohols; and mixtures thereof. When propylene  
35 glycol is used as a moisturizer, it is used at a level of at

least 5%. The polyols are preferably used at levels of from about 10-30%.

5 The liquid cleanser can contain from about 0.5% to about 15% of a lipophilic emollient moisturizer selected from the group consisting of: petrolatum; esters of fatty acids; glycerin mono-, di-, and tri-esters; epidermal and sebaceous hydrocarbons such as cholesterol, cholesterol esters, squalene, squalene; silicone oils and gums; mineral oil; lanolin and  
10 derivatives and the like; and mixtures thereof.

A preferred improved stable product with a moisturizing benefit is achieved with the incorporation of larger sized petrolatum particles into selected fatty acid/soap matrixes. The larger  
15 sized petrolatum particles will vary for a liquid or semi-solid. The key is to select the fatty acid and/or soap matrix and to mix in the petrolatum using a minimal controlled amount of shear to maintain larger petrolatum particles and achieve a homogeneous stable product, e.g., an improved benefit is also  
20 achieved in a semi-solid cleansing cream.

Any fatty acid matter (free and neutralized) used in the liquid cleanser preferably has an Iodine Value (I.V.) of from zero to about 15, preferably below 10, more preferably below 3.  
25

#### BACTERIOSTAT

The bacteriostats which are the second critical component of the liquid cleanser composition are generally halogenated  
30 bacteriostats. The first bacteriostats (chemicals which control bacteria which in turn cause sweat to break down into malodorous components) were introduced into soap bars about 1950.

35

The most widely used of these are hexachlorophene; chlorhexidine; 3,4,4'-trichlorocarbanilide; 3,4',5-tri-bromosalicylanilide; 4,4'-dichloro-3'-(trifluoromethyl) carbanilide; and 2,4,4'-trichloro-2'-hydroxy diphenyl ether.

5

The bacteriostat is used on the compositions of the invention in an amount ranging from 0.01% to 10% by weight, preferably 0.05 to 5% by weight of the composition.

10 The present invention is directed to the unexpected observation that these bacteriostats, when applied with the mesh sponge described above, were much better dispersed/deposited than if applied with other types of sponges.

15 Other Ingredients

The cleansing bath/shower compositions can contain a variety of nonessential optional ingredients suitable for rendering such compositions more desirable. Such conventional optional  
20 ingredients are well known to those skilled in the art, e.g., preservatives such as benzyl alcohol, methyl paraben, propyl paraben and imidazolidinyl urea; other thickeners and viscosity modifiers such as C<sub>8</sub>-C<sub>18</sub> ethanolamide (e.g., coconut ethanolamide); pH adjusting agents such as citric acid,  
25 succinic acid, phosphoric acid, sodium hydroxide, etc.; suspending agents such as magnesium/aluminum silicate; perfumes; dyes; and sequestering agents such as disodium ethylenediamine tetraacetate.

30 If present, the optional components individually generally comprise from about 0.001% to about 10% by weight of the composition, but can be more or less.

Optional thickeners are categorized as cationic, nonionic, or  
35 anionic and are selected to provide the desired viscosity.

Suitable thickeners are listed in the Glossary and Chapters 3, 4, 12 and 13 of the Handbook of Water-Soluble Gums and Resins, Robert L. Davidson, McGraw-Hill Book Co., New York, N. Y., 1980, incorporated by reference herein.

5

The liquid personal cleansing products can be thickened by using polymeric additives that hydrate, swell or molecularly associate to provide body (e.g., hydroxypropyl guar gum is used as a thickening aid in shampoo compositions).

10

A suitable thickener is hydroxy ethyl cellulose, e.g., Natrosol R 250 KR sold by The Aqualon Company.

15

Another thickener is acrylated steareth-20 methylacrylate copolymer sold as Acrysol ICS-1 by Rohm and Haas Company.

The amount of polymeric thickener found useful in the present compositions is about 0.1% to about 2%, preferably from about 0.2% to about 1.0%.

20

The liquid cleanser can be made with from about 0.1% to about 5%, preferably from about 0.3% to about 3%, of a skin moisturizing cationic polymer selected from the group consisting of: cationic polysaccharides and derivatives, cationic copolymers of saccharides and synthetic monomers, synthetic copolymers and cationic protein derivatives.

25

In a second embodiment of the invention, the invention relates to a method of enhancing delivery/deposition of bacteriostat which method comprises applying liquid cleanser comprising said bacteriostat to skin or to mesh sponge and rubbing or massaging said sponge over area where enhanced delivery/deposition is desired.

35

Specifically, the method comprises applying to a substrate selected from the group consisting of skin, a polymeric meshed sponge and combinations thereof a liquid cleanser comprising:

- 5           (1) an effective amount of surfactant selected from synthetic surfactants and mixtures thereof; and  
            (2) a halogenated bacteriostat; and

10           rubbing said polymeric mesh sponge against skin to spread the liquid cleanser.

The liquid cleanser/compositions and the bacteriostat are as defined above.

15           Unexpectedly, it has been found that the mesh sponge delivers greater amounts of bacteriostat than are delivered when other sponges are used.

20           The following examples are intended to further illustrate the invention and are not intended to limit the invention in any way.

All percentages used are intended to be by weight unless stated otherwise.

25

Example 1

The polymeric mesh was packaged in a kit which contained a liquid cleanser comprising as follows:

30

INGREDIENT	% BY WEIGHT
Acyl Isethionate	1-15%
Anionic other than Acyl Isethionate(SLES)*	1-15%
Amphoteric Surfactant**	5-15%
Sequestrant (EDTA or EHDP)	0.01-0.1%
Moisturizer (e.g. cationic polymer)	0.05-3.0%
Standard additives (e.g., dyes, perfumes)	0-10%
DP300 (Triclosan)	.1-1%
Water	Balance

\* Sodium lauryl ether sulfate

\*\* Cocamidopropyl betaine

#### Example 2

The polymeric mesh was packaged in a kit that contained a liquid cleanser comprising as follows:

INGREDIENT	% BY WEIGHT
Acyl Isethionate	1-15%
Anionic other than Acyl Isethionate	1-15%
Amphoteric	20-30%
Moisturizer (e.g. silicone)	3-7%
Minors (perfumes, preservatives)	0.1-10%
Triclosan	0.1-1%
Water	Balance

#### Example 3

The polymeric mesh is packaged in a kit which contains a liquid cleanser comprising as follows:

	<u>Composition * (Estimated Ingredients)</u>	<u>Estimated % by wt.</u>
	Ammonium Lauryl Sulfate	6.6
	Sodium Laureth Sulfate	5.2
5	Lauramide DEA	3.5
	Glycerin	1.5
	Isostearamidopropyl Morpholine Lactate	0.6
	Citric Acid	0.2
	Disodium Ricinoleamido MEA Sulfosuccinate	0.1
10	Triclosan	0.2
	Water	80.9
	Dyes, EDTA, Hydantoin	
	*Liquid Dial Antibacterial Soap	

15 Example 4

The polymeric mesh is packaged in a kit which contains a liquid cleanser comprising as follows:

20	<u>Composition *</u>	<u>Estimated % by Wt.</u>
	Glycerin	19.5
	Sodium Soap	14.1
	Disodium Lauroamphodiacetate	3.5
	Cocamidopropyl Betaine	1.5
25	Lauramide DEA	2.0
	Triethanolamine	0.9
	Water	55.7
	BHT	Minor
	Citric Acid	Minor
30	Methylparaben	Minor
	Trisodium HEDTA	Minor
	Propylparaben	Minor
	Colorants	Minor
	Perfume	Minor
35	*Neutrogena	

Example 5

In order to show that deposition of bacteriostat (i.e., Triclosan<sup>®</sup> or DP300) was greater using pouf than a sponge, the following experiment was conducted:

First, applicants obtained a composition comprising the following ingredients.

10	<u>Ingredient</u>	<u>% by Wt.</u>
	coccamidopropyl betaine	= 27%
	Sodium Laureth Sulfate	= 7%
	Sodium Cocoyl Isethionate	= 6%
	Silicone	= 5%
15	Water	= 53%
	Fragrance, Colorants, Minors	= 2%

Applicants prepared a 25% solution of said shower gel composition containing approx. 2.5 uCi/ml radio labeled DP300 (14C-DP300, specific activity = 157 uCi/mg). 1 ml of the shower gel solution was applied to 1.2 g of pouf (original size 40 g) or 0.4 g sponge (original size 12 g), and the pouf and sponge were squeezed 20 times to create lather. Piglet back skin of 12 sq. cm in size was washed with the pouf or sponge for 30 seconds, rinsed under running water for 30 seconds, and patted dry with paper towel. The amount of DP300 deposited on the skin was determined using autoradiography and results set forth below.

30 Pouf = 0.07 ug/cm<sup>2</sup> (S.D. = 0.02); Sponge = 0.03 ug/cm<sup>2</sup> (S.D. = 0.003)  
S.D. = standard deviation (n = 4)

35 The results clearly show that deposition using pouf was significantly better than deposition using a sponge.



Example 6

In order to further show enhanced deposition of pouf versus sponge, applicants conducted a skin disc substantivity test as follows:

Applicants prepared pig skins (shaved) and applied the products noted for 30 seconds. Shower Gel A was as in Example 5 and contained ~0.25% Triclosan; Shower Gel B was a non-germicidal product. The treated sections were placed on agar plates seeded with *S. aureus* ATCC #6538 or *K. pneumoniae* ATCC #4352 for 30 minutes and then incubated at 34°C for 24 hours. The sections were placed on the agar plates ~ 15 minutes after product application.

Results are set forth in Table 1 below:

TABLE 1 SKIN DISC SUBSTANTIVITY RESULTS			
Sample	Application	Inhibition Score (Average of 3 skin sections)	
		<i>S. aureus</i> ATCC #6538	<i>K. pneumoniae</i> ATCC #4352
Shower Gel A	Pouf	3.83	4.00
Shower Gel A	Sponge	0.83	0.00
Shower Gel B	Sponge	0.00	0.00

Against *S. aureus*, Shower Gel A applied with pouf resulted in strong to complete inhibition of the organism. The product applied with sponge (sponge from Jergens) demonstrated less than slight inhibition. As expected, the nongermicidal Shower Gel B displayed no inhibitor activity.

Against *K. pneumoniae*, Shower Gel A applied with the pouf resulted in complete inhibition. Shower Gel A applied with the

sponge and Shower Gel B/ sponge did not inhibit the bacteria (score = 0).

5 From this data (see Examples 5 & 6), it is clear that pouf deposits bacteriostat in a far superior way to the sponge.

CLAIMS

We claim:

- 5     1.    A personal bath or shower bath cleansing system  
          comprising:
- (A)   a light weight polymeric meshed personal cleansing  
                  hand held sponge; said polymeric mesh sponge being  
10               in a form suitable for use as a hand held cleansing  
                  implement; and
- (B)   a liquid cleanser comprising
- (1)   an effective amount of surfactant selected from  
15                   the group consisting of a surfactant selected  
                      from the group consisting of anionics,  
                      nonionics, cationics, zwitterionics and/or  
                      amphoterics   and mixtures thereof; and
- (2)   .01% to 10% by weight of a halogenated  
20                   bacteriostat.
2.    A system according to claim 1 wherein the light weight  
polymeric meshed personal cleansing hand held polymeric  
mesh sponge is made of polyethylene diamond mesh and has a  
25       diameter of from 3 to 5 inches (7.62 cm to about 12.7 cm).
3.    A system according to claim 1, wherein the surfactant  
system comprises:
- 30       (a)    1% to 15% by wt. total composition of an acyl  
                  isethionate;
- (b)   1 to 15% by wt. of the total composition of an  
                  anionic surfactant other than acyl isethionate; and
- (c)   0.5 to 15% by wt. of total composition amphoteric.  
35

4. A system according to claim 1, wherein the halogenated bacteriostat is selected from the group consisting of hexachlorophene; chlorhexidine; 3,4,4'-trichlorocarbanilide; 3,4',5-tri-bromosalicylanilide;  
5 4,4'-dichloro-3'-(trifluoromethyl) carbanilide; and 2,4,4'-trichloro-2'-hydroxy diphenyl ether
5. A method of enhancing delivery/deposition of bacteriostat comprising:
- 10 (a) applying to a substrate selected from the group consisting of skin, a polymeric meshed sponge and combinations thereof a liquid cleanser comprising
- 15 (1) an effective amount of surfactant selected from the group consisting of synthetic surfactants and mixtures thereof; and  
(2) a halogenated bacteriostat; and
- 20 (b) rubbing said polymeric meshed sponge against skin to spread the liquid cleanser.

Fig.1.  
PRIOR ART

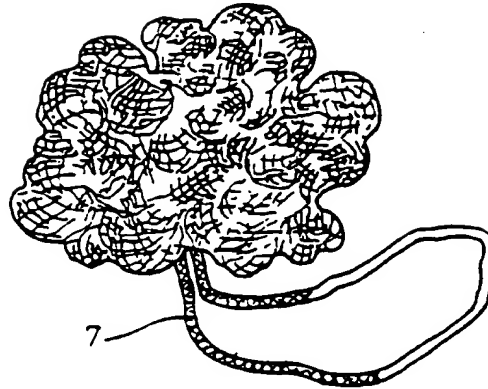


Fig.2.  
PRIOR ART

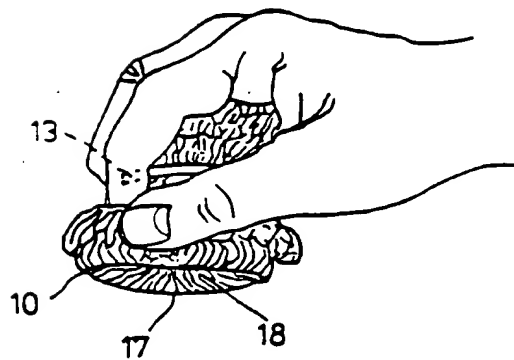
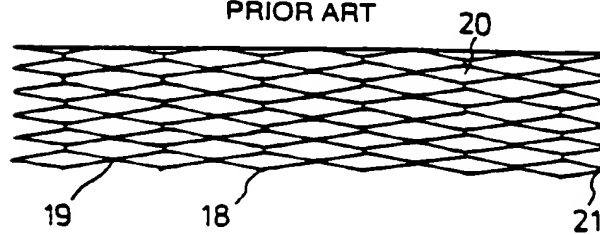


Fig.3.  
PRIOR ART



# INTERNATIONAL SEARCH REPORT

International Application No

PLI/EP 96/03718

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 6 A61K7/50 A61K7/48

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO,A,95 00116 (THE PROCTER & GAMBLE COMPANY) 5 January 1995 cited in the application see the whole document ---	1
A	US,A,4 323 466 (CURRY JANET C ET AL) 6 April 1982 see the whole document -----	1

☐ Further documents are listed in the continuation of box C.

☒ Patent (family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*A\* document member of the same patent family

Date of the actual completion of the international search

15 January 1997

Date of mailing of the international search report

24.01.97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl  
Fax (+31-70) 340-3016

Authorized officer

Couckuyt, P

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PC1/EP 96/03718

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO-A-9500116	05-01-95	BR-A- 9406807	23-07-96
		CA-A- 2165050	05-01-95
		CN-A- 1135174	06-11-96
		EP-A- 0702550	27-03-96
-----			
US-A-4323466	06-04-82	CA-A- 943429	12-03-74
-----			

**THIS PAGE BLANK (USPTO)**